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NSWC INDIAN HEAD  
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LETTER AND COMMENTS FROM U S DEPARTMENT OF INTERIOR REGARDING  
ECOLOGICAL RISK ASSESSMENT CHAPTER OF MASTER WORK PLAN AND PROJECT  
SPECIFIC REMEDIAL INVESTIGATION WORK PLAN NSWC INDIAN HEAD MD

1/23/1997

U S DEPARTMENT OF INTERIOR



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office

177 Admiral Cochrane Drive

Annapolis, MD 21401

January 23, 1997

Mr. Rob Sadorra, Code 1812  
Department of the Navy  
Engineering Field Activity Chesapeake  
Washington Navy Yard Building 212  
901 M Street SE  
Washington, D.C. 20374-5018

RE: Indian Head Surface Warfare Center.  
Documents: Ecological Risk Assessment  
Section of Master Work Plan (July 1996)  
and Project Specific Remedial Investigation  
(RI) Work Plan (July 1996) for Indian Head  
Division Naval Surface Warfare Center

Dear Mr. Sadorra:

The U.S. Fish and Wildlife Service has reviewed the Ecological Risk Assessment chapter of the Master Work Plan and the Project Specific Remedial Investigation Work Plan for the Indian Head Division Naval Surface Warfare Center. The following comments are for your consideration.

#### Ecological Risk Assessment Chapter of the Master Work Plan

1. Page 4-2, Section 4.0: The Service supports the use of the Environmental Protection Agency Environmental Response Team (1994a) *Process for Designing and Conducting Ecological Risk Assessments* as the primary guidance document. The chapter seems to advocate a merging of this document with the EPA Region III (1994b) guidance. While both documents are suitable approaches to Ecological Risk Assessment, they are not totally compatible. The Service recommends following the Environmental Response Team document, which has undergone a more thorough review process.
2. Page 4-4, Section 4.1.1.2: The section should state specifically that searches will be conducted for state and federally listed rare, threatened, and endangered species. For federal species, a letter request should be sent to Andrew Moser of the Chesapeake Bay Field Office.
3. Page 4-8, Section 4.1.2: There should be a section on food chain modeling and risk to wildlife. It should discuss assumptions used in the screening and final risk assessments.

4. Page 4-8, Section 4.1.2.2: The Service recommends that the following papers be considered as a source of screening values for freshwater sediments:

Smith, S.L. *et al.* 1996. A preliminary evaluation of sediment quality assessment values for freshwater ecosystems. *J. Great Lakes Research* 22:624-638.

Ingersoll, C.G. *et al.* 1996. Calculation and evaluation of sediment effect concentrations for the amphipod *Hyaella azteca* and the midge *Chironomus riparius*. *J. Great Lakes Research* 22:602-623.

Long and Morgan (1990) is primarily based on estuarine and marine data. Long et al. (1995) is exclusively based on estuarine and marine data. Since Indian Head is in a tidal freshwater area, the Smith and Ingersoll papers are more appropriate sources of screening values.

### Project Specific Remedial Investigation Work Plan

#### Chapter 3

1. General Observations on Site 12: The Service is concerned that the sampling plan is largely aimed at identifying sources of contamination with little or no emphasis on impacts of contaminants on aquatic and wetland resources. Previous studies apparently have shown that while concentrations of metals are high in pond sediments the chemicals are not bioaccumulated. (The Service needs to obtain and review these studies). There is no information on the ecological status of the pond, however, especially the status of the bottom-dwelling (benthic) organisms. The Service suggests that a limited number of sediment samples (perhaps 6-8) be collected from various areas of the pond such that a concentration gradient is obtained. These samples would be analyzed chemically, tested for toxic effects with the amphipod crustacean, *Hyaella azteca*, and analyzed in terms of the abundance, diversity, and biomass of benthic organisms. The study would be essential for the determination of ecological risk to pond-dwelling organisms.

2. Page 3-1, Section 3.1, third paragraph: The location of the 30 ppm arsenic concentration and the medium need to be identified. Neither figure in this chapter identifies a creek or stream although there are many mentions of flowing water in the text.

3. Page 3-1, Section 3.2, first paragraph: Does the 30 mg/l arsenic in the leachate sample correspond to the 30 ppm mentioned in section 3.1?

4. Page 3-5, first whole paragraph: The text states that Figure 3-2 indicates the locations of the previous samples and the results which exceed screening levels. No data or sample locations are given on this figure.

## Chapters 4 and 5

1. General Observations: The Service would prefer to see an assessment of the overall ecological health of Mattawoman Creek as a major effort in the RI. The present plan is largely focussed on the assessment of 8 sediment samples (3 from outfalls, 5 from the creek) associated with sites 39 and 41. The Service prefers a program focussed on Mattawoman Creek as a whole, in which samples would be collected from depositional areas, including the marsh tidal flats, all along the facility, with emphasis on sites 39-41. This may involve increasing the number of samples from a total of 8 to perhaps 20-25. A design should be worked out with interaction from Steve Hiortdahl of U.S. Geological Survey (USGS) on the currents and deposition in the creek. For this effort, it may be necessary to identify and conduct limited sampling in a creek that can serve as a reference location. A cost-effective strategy may be to collect the samples for sediment chemistry (along with extra sediments for possible toxicity testing and benthic analysis) with a 14-day turnaround. If the chemical concentrations exceed screening levels, the extra sediments could be tested with the amphipod, *Hyalella azteca*, and analyzed for abundance, diversity, and biomass. The three measures -- chemistry, toxicity, and benthic community analysis -- constitute a sediment triad approach to site evaluation. These data would be the key elements for assessing ecological risks in Mattawoman Creek.

## Chapter 6

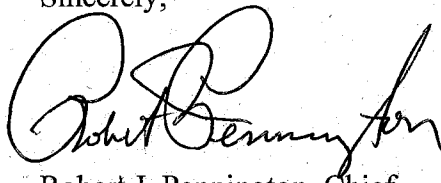
1. Table 6-7, page 6-20: Sediment samples should be frozen (or at least kept at 4 °C) prior to metals analysis. This comment applies to other tables as well.
2. Figure 6-3, page 6-21: Two additional samples should be collected in the area designated as a swamp, to the south of RI42SS01. These samples should indicate whether contaminants are present in a depositional area, downgradient from the site.

## Chapters 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18

1. No comments.

The Service appreciates the opportunity to comment on these documents. Please contact Fred Pinkney at (410) 573-4521 if you have any questions.

Sincerely,



Robert J. Pennington, Chief  
Branch of Water Quality and  
Environmental Contaminants

References:

Environmental Protection Agency (1994a). Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Environmental Response Team, Edison, NJ.

Environmental Protection Agency (1994b). Region III Interim Ecological Risk Assessment Guidance. EPA Region III, Philadelphia, PA.

Long, E.R. and L.G. Morgan. 1990. The Potential for Biological Effects of Sediment-sorbed Contaminants Tested in the National Status and Trends Program. NOAA Tech. Mem. NOS OMA 52.

Long, E.R. et al. 1995. Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. Environmental Management 19:81-97.